

## Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004 and 2005. For more information, please visit [www.landfire.gov](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

### Potential Natural Vegetation Group (PNVG)

R#ABAMup Pacific Silver Fir--High Elevation

#### General Information

**Contributors** (additional contributors may be listed under "Model Evolution and Comments")

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**Vegetation Type**

Forested

**General Model Sources**

- Literature  
 Local Data  
 Expert Estimate

**Rapid Assessment Model Zones**

- California  Pacific Northwest  
 Great Basin  South Central  
 Great Lakes  Southeast  
 Northeast  S. Appalachians  
 Northern Plains  Southwest  
 N-Cent.Rockies

**Dominant Species\***

ABAM  
TSME  
PICO  
CHNO

**LANDFIRE Mapping Zones**

1 8  
2 9  
7

#### Geographic Range

The Pacific Silver fir PNVG occurs on the western slopes of the Cascades from British Columbia south to the Rogue and Umpqua River divide in the Southern Cascades. It is also found in the Olympic Mountains and on the eastern slopes of the Cascade crest.

#### Biophysical Site Description

The Pacific Silver fir forests described in this PNVG occur at upper elevations within the Pacific Silver fir zone (800 - 1100 meters in the North, 1800 - 2000 meters in the south). These forests are cool and moist, and typically have a heavy snowpack and a late snow-melt.

#### Vegetation Description

Pacific Silver fir is the dominant and climax tree species in the mature canopy, which it shares with Lodgepole pine, White pine, Mountain hemlock and Alaska Yellow-cedar (especially in Washington). The understory is predominantly composed of a well developed layer of heath shrubs (*Vaccinium*, *Menziesia*, *Gaultheria*, *Chimaphila*, *Rhododendron* and *Pyrola*) and lush herbs and moss (e.g. *Cornus canadensis*, *Clintonia uniflora*, *Linnaea borealis*, and *Tiarella unifoliata*).

#### Disturbance Description

The fire regime for this PNVG is characterized by infrequent fires occurring at approximately 500 year intervals. These events were of high severity and large extent, resetting 1000's of acres through stand-replacement fire. Avalanches and blowdown are also common disturbances.

#### Adjacency or Identification Concerns

This high elevation Pacific Silver fir PNVG occurs below the Mountain hemlock forest type. This PNVG is distinguished from the low elevation Pacific Silver Fir type (R#ABAMlw) by elevation breaks: the high elevation type occurs above 800m in the north and 1800m in the south.

\*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

**Scale Description**

Sources of Scale Data  Literature  Local Data  Expert Estimate

Stand-replacing fire events occur on the scale of 1000's of acres. Although infrequent avalanches and wind disturbances occur at these scales, these disturbances are more frequent at scales of 10's and 100's of acres.

**Issues/Problems**

Although windthrow and avalanches are known disturbances in this PNVG, the nature of these disturbances are based upon opinion only, and should be checked for validity.

**Model Evolution and Comments**

Ran model for 1500 years to accommodate long fire return interval. Wind and avalanche were not explicitly modeled. Class C and D together account for about 5% of the landscape, so the percentage values were left as small values (2.28% and 2.8%, respectively).

**Succession Classes\*\***  
*Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).*

**Class A 10 %**

Early1 PostRep

**Description**

The early seral stand consists of low heath shrubs, seedlings and saplings. Silver fir is seral. Douglas fir and Lodgepole pine may also be seral, but do not occur consistently (10% relative cover each). [Lasts up to 50 years before passing to class B - mid/open. Replacement fire about every 500 years (.002 probability.)]

**Dominant Species\* and Canopy Position**

ABAM  
PSME  
PICO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	0 %	60 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class B 25 %**

Mid1 Closed

**Description**

Canopy closure occurs in the middle-aged stand. Silver fir continues to dominate the stand, and continues to fill in the midstory along with other shade tolerant conifers (Mountain hemlock, Alaska yellow-cedar [in the north] and Noble fir [in the south]). Trees in this class are no larger than 20" dbh. [Succeeds to late/closed after 150 years in this class. Mixed fire has the same probability to open the stand (to class C) as it does to maintain in closed state, but occurs at a low probability (0.0005 for each disturbance).]

**Dominant Species\* and Canopy Position**

ABAM  
TSME  
PSME  
CHNO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	60 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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**Class C 2%**

Mid1 Open  
**Description**

The canopy is opened up through mixed-severity fire. This increases the relative ratio of Douglas-fir in the stand temporarily, until the canopy closes in again. Trees in this middle stage are less than 20" dbh. [Replacement fire every 1000 years; mixed fire open it up to class C at 2000 years.]

**Dominant Species\* and Canopy Position**

ABAM  
PSME  
TSME  
CHNO

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	20 %	60 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class D 3%**

Late1 Open  
**Description**

The overall density of trees is reduced through mixed-severity fire, wind events, and avalanches, however Silver fir continues to be dominant. Trees in this stand average 45" dbh and range from 21" - 120". [Succeeds to closed (class E) after 50 years. Replacement fire every 500 years; mixed fire every couple thousand years.]

**Dominant Species\* and Canopy Position**

ABAM  
TSME  
CHNO  
PSME

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	20 %	60 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

**Class E 60%**

Late1 Closed  
**Description**

The mature stand is dominated by Pacific silver fir and other shade tolerant species (Mountain hemlock and Alaska yellow-cedar). The trees average 45" in diameter and range from 21" - 120". [Replacement fire recurs about every 500 years on average; but mixed fire might occur every 1000 years on average. That mixed severity fire has equal chance of opening the stand to class D as to maintaining the stand in class E. Similarly, Insect/Disease recurs at the same frequency (0.001 probability) and has an equal

**Dominant Species\* and Canopy Position**

ABAM  
TSME  
CHNO  
PSME

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model** no data

**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	60 %	100 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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chance at that time of opening the stand (class D) as replacing a patch.]

**Disturbances**

**Disturbances Modeled**

- Fire
- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other

**Fire Regime Group: 5**

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

**Fire Intervals (FI)**

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

**Historical Fire Size (acres)**

Avg: no data  
 Min: no data  
 Max: no data

**Sources of Fire Regime Data**

- Literature
- Local Data
- Expert Estimate

	<i>Avg FI</i>	<i>Min FI</i>	<i>Max FI</i>	<i>Probability</i>	<i>Percent of All Fires</i>
<i>Replacement</i>	500			0.002	69
<i>Mixed</i>	1100			0.00091	31
<i>Surface</i>					
<i>All Fires</i>	344			0.00292	

**References**

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Franklin, Jerry F. and C. T. Dyrness 1988. Natural Vegetation of Oregon and Washington. Oregon State University Press

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Henderson, J.A.; Peter, D.M.; Leshner, R.D.; Shaw, D.C. 1989. Forested plant associations of the Olympic National Forest. R6-ECOL-TP-001-88. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. . 502 p.

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